

97-84044-11

Lewisohn, Sam Adolph

Address on the relation of  
the engineer to the...

[Boston]

[1920]

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Box 84 Lewisohn, Sam Adolph, 1884-1951.  
Address on the relation of the engineer to  
the human factor in industry, to the Harvard  
liberal club of Boston, by Sam A. Lewisohn...  
May 7, 1920.  
8 p. 23 cm.  
Half-title.

ok ed

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## TECHNICAL MICROFORM DATA

FILM SIZE: 35 mmREDUCTION RATIO: 1/1IMAGE PLACEMENT: IA IIA IB IIBDATE FILMED: 3-7-97INITIALS: FBTRACKING #: MSH 21921

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ADDRESS

ON

The Relation of the Engineer to the  
Human Factor in Industry

TO THE

Harvard Liberal Club of Boston

BY

Sam A. Lewisohn

BOSTON

MAY 7, 1920.

7 July 1930 S. J.

## THE RELATION OF THE ENGINEER TO THE HUMAN FACTOR IN INDUSTRY

Some literary wag, a number of centuries ago, related a story of a man who sold pills to cure earthquakes. I do not wish to place myself in the position of that sanguine individual in what I have to say this evening. However, I must confess that I agree with this club that as to one phase of industrial relations there is a specific remedy to be applied.

Now at the very start I am going to make a confession. I am one of those much execrated individuals—an absentee landlord. In this connection there has been plenty of comment about the fact that the day of the small business run by the all-around business man has passed, but some of the important *consequences* of so-called "big business" have escaped general attention. It has not been sufficiently appreciated that plants in industries where large production exists are no longer managed and operated by laymen of broad business training and experience but instead by technically equipped managers—men with a specialized engineering training. No statistics are available, I believe, to determine just what proportion of our managers are men of this type but it is certainly an *important* and a *growing* group. These men (with, of course, the foremen under them) are in the "key positions" as far as the handling of the every-day labor problem is involved. It is idle at least in my opinion to discuss this condition as if we were describing a melodrama, with the absentee landlord as the villain, when we are merely facing a corollary of modern industrial specialization. Most owners and directors even if they have the inclination, time and sympathy to study the local labor problems, feel that it is not wise to interfere with the work of the manager in charge because such problems are so interwoven with the daily routine of other operating problems that they have not the intimate knowledge of the nuances of situations that justifies them in interfering. No matter how desirous of a modernized labor policy the amateur on top may be, it is impossible for him to carry it out unless the technically equipped manager himself has the same point of view. Directors

have to rely on the managers for the facts of any situation and so while they can exercise much influence, in guiding general policies, it rests with the managers to apply these policies.

I am each year increasingly persuaded that a large part of the industrial leadership of the country must come from the managers with a technical training, who have superseded the old owner managers. Progress in securing better esprit de corps in our industrial plants will depend upon the *knowledge* of such managers of human engineering and their *skillfulness* in handling human problems. There are, of course, many phases of the industrial problem in which they will be helpless, but they can be most useful in promoting industrial health within their establishment and thus in *preventing* disputes from arising. We have heard much of employee representation schemes under the name of shop committees and works councils—and they are a most important development—but the success of such schemes depends primarily upon the quality of the leadership which the local management affords. Leadership is after all the essential in establishing a good morale in industrial establishments just as in any organization, military, social, political or otherwise.

A great deal has been made of the possibilities of the new profession of employment manager and it is true that in the development of this profession we have made a very big step in the right direction. But of what use is the employment manager unless the general manager in charge of the entire plant has sufficient background to make him sympathetic to the installation of a personnel department. If he is not sympathetic he can block any efforts at modernization that the personnel manager attempts to introduce. It is argued it is true by some that the industrial specialist should have *co-ordinate jurisdiction* with the man in charge of physical problems but in many establishments, if not in most, this is impracticable from an administrative point of view. It is usually most undesirable to have a house divided against itself. Another obvious suggestion is that the industrial specialist should be put in full charge. But this does not take into consideration the fact that there are many plants in which the nature of the problems render it essential that the technical man occupy the titular position.

I cannot emphasize too strongly how influential a factor the manager is. Of course, the foreman is an important link and there has been a great deal of discussion about the necessity of properly training the foreman. But the manager is the man whose personality pervades the plant. In this connection to quite an extent the foremen are now recruited from the ranks of graduates of technical schools.

In view of the important position that the engineer holds with respect to industrial leadership, how adequately equipped do we find him to handle human engineering. It may be interesting to quote an excerpt from the report of the President's mediation commission after their visit to the mining district of Arizona. That commission said: "The managers fail to understand and reach the mind and heart of labor because they have not the aptitude or the training.... for wise dealing with the problems of industrial relationships." The managers in this case were mostly engineers.

Of course, the capacity for handling human beings depends, to a large extent, upon a magnetic personality and there are many engineers with this native capacity. But a native capacity alone will not solve the problem of handling the organization of employees of a large plant. I could give several instances of graduates of technical schools who had become managers of important plants and had all the temperamental qualities necessary for leadership but who failed to make a maximum success in the handling of their employees because of their lack of interest in the personnel problem. The evidence in fact is overwhelming that the usual practice in the past of confining the training of the engineer solely to studying the *reactions of dead matter* has tended to cripple him in his handling of human relations. A purely technical education in problems which require quantitative methods does not equip a man to assume leadership of men. We have not yet come to the point where human reactions can be weighed and measured. Quite a number of engineers realize this and I am going to take the liberty of giving an additional quotation from a paper in a technical publication. The author, Mr. Corless of the Mond Nickel Co. says: "A question that deeply concerns us as en-

gineers, managers, or superintendents of industrial enterprises is that of efficiency. In this matter, I fear, we have much blame to accept for narrowness of view. Because of our special training in the material sciences and their application to industry, we have confined our attention altogether too exclusively to machines, to processes, to arrangement of plants, and to the external forms of organization. We have paid far too little attention to the "imponderables"—to ethical standards, to psychological conditions, and to the mental attitude of those on whom real efficiency must finally depend." I quote this because it is rather *exceptional*. There are some engineers who do not seem to realize that there is any distinction between physical and human problems.

On the other hand, it may be unorthodox but personally I do not feel that the substitution of the employed technical manager for the layman owner manager is necessarily undesirable from a social point of view. On the contrary what particularly impresses me is that this substitution may be a blessing in disguise—a real opportunity—but an opportunity from which social advantage can only be derived if recognized and utilized in time. The so-called broadminded owner manager was no doubt more a man of the world and preferable to the type of narrow specialist too often turned out by our technical institutions—men dehumanized by the very intensity of their application to routine studies. But, on the other hand, a man who takes up engineering *does* learn to be dispassionate and objective and *is* taught to seek the truth undisturbed by prejudice or preconception. The old fashioned owner manager has too often been hampered in the handling of his employees by the conventions of his class. He may have been human but surely it has been a dogmatic humanity. On the contrary the scientific approach of the engineer is unfriendly to intolerance. Above all, he is taught to be thorough and openminded. When the engineer brings to the human sciences the devotion, thoroughness and realism that he has in the past applied to the material sciences, we get a Herbert Hoover.

I have had the opportunity of meeting some engineer managers who had combined with their knowledge of the material sciences a scientific study of human relations and I was impressed by the superiority of their approach to other industrial managers. The

opportunity thus is offered, in my opinion, of developing a new and improved type of industrial manager. Those primarily responsible for making the most of this opportunity are the members of the trustees and faculties of our technical schools who have the task of planning the curricula of those schools and of furnishing the inspiration to the students. If I may be permitted the use of a colloquialism—"It is strictly up to them." If, in planning the work of those students who by any possibility may in later life have charge of men, such trustees and faculty are willing to put sufficient emphasis upon social economics and the modern technique and methods of handling labor, we may develop a type of industrial leader who will do much to solve our industrial problems. If the authorities at engineering schools are not willing to make this adjustment, those of us responsible for securing managers for our plants will have to go elsewhere and will have to prefer the lay-manager to the technically equipped man, except in those plants which because of the exigencies of the problems involved we must perforce put in charge of men with an engineering training. In the latter case with managers naive in their approach to human problems, the proper handling of personnel will necessarily suffer as it has in the past. Now we must face the fact that in order to properly equip technical students to handle human relations it may be necessary to sacrifice a certain amount of their technical work. But this sacrifice must be made if the result is to be achieved. In addition to a revision in the formal curricula there should be modification in the practice work. In the summer months the students should be required to supplement their civil engineering, geological expeditions and other field work by actually working in industry with the men they will handle in their future careers.

But mere change of curricula is not sufficient. The professional enthusiasm of the student who is to have charge of handling men must be so aroused that his interest in the personnel problem may be on a par with his interest in the material sciences. Unless his professional interest in this subject has been awakened while a student he is apt in his later career, when his ideas have become crystalized, to dismiss any modern literature on the subject as too academic. On the other hand if his interest has been stimu-

lated during his period of incubation it will become a part of his professional equipment. As a result he will be induced, when he becomes a manager, to go ahead with his plans for the modernization of the handling of his labor problem upon his own initiative. To give a concrete example he will adopt such a device as individual production records without any prodding from above. A manager with such a background will take it upon himself to persuade his directors and executive officers of the wisdom of a more enlightened and more skillful labor policy just as he is now able to persuade his directors to allow him to install experimental improvements in metallurgical and mechanical processes. In view of the impression of many of us executives as to this weakness in the training of engineers, I am indeed interested to note the statement of the Harvard Liberal Club that an investigation has disclosed that engineering schools ignore the human factor. I understand, however, that many of our technical institutions are already doing a good deal to remedy the situation. I certainly hope that the Harvard engineering faculty will come to realize the opportunity offered them of making an important contribution towards the solution of our vexing industrial problems. We have heard much of the necessity of educating *trade union officials* and *labor leaders* but we have too long neglected the problem of the proper training of the men who after all must play, because of their administrative positions, as important a part in industrial leadership as labor leaders.

In conclusion, let me emphasize that the subject of industrial relations, though it should be studied by technical men, is fundamentally not a technical problem but a human one. Not only the mind but also the heart of the prospective manager should be trained and he should be imbued with a thoroughly human and liberal attitude. Only thus will he be able to understand and reach the heart as well as the mind of labor.

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